

REMARKS

The present response is intended to be fully responsive to the rejection raised in the Office Action mailed December 30, 2008 ("Official Action"), and is believed to place the application in condition for allowance. Further, the Applicants do not acquiesce to any portion of the Official Action not particularly addressed.

In the Official Action, the Examiner noted that claims 7-9 are pending. The Examiner also noted that claims 7-9 are rejected. Applicants now request that the Examiner reconsider the claims in view of the amendments and remarks herein.

Amendment to the Claims

As set forth in the amendment to the claims above, Applicants amend claims 7-8. The amendment to claim 8 is to attend to an antecedent basis issue arising from the amendment to claim 7. The amendment to claim 7 is discussed below. Support for the amendment to the claims may be found throughout the present application's specification, abstract drawings and claims, including, for example, Figures 6-8 and corresponding portions of the specification. The Applicants submit that no new matter has been added by way of the amendment to the claims.

Claim Rejections under 35 U.S.C. §112

The Examiner rejected each of the claims 7-9 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner rejected claim 7-9 because claim 7 recites the elements "noise canceling signal," and the specification does not describe signals for canceling noise, but instead describes signals for

canceling leakage. Although a matter of semantics¹, Applicants amend claim 7 to now recite "a leakage canceling signal." Pursuant to such amendment, Applicants submit that the rejection of claims 7-9 under 35 U.S.C. §112, first paragraph, is no longer warranted. Accordingly, the Applicants request that the Examiner withdraw the rejection under 35 U.S.C. §112, first paragraph.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejected claims 7-9 under 35 U.S.C. 103(a) as being unpatentable over WO 02/078388 A2 to Bienek et al. ("*Bienek*") in view of U.S. Patent No. 4,868,878 to Kunugi et al. ("*Kunugi*"). With respect to the rejection of claim 7, the Examiner admitted that *Bienek* does not disclose, teach or suggest the previously-presented claim elements:

in which predetermined transfer characteristics are set at the second plurality of digital filters so as to cause a canceling sound wave to be produced to control sound at a second point within the sound field among sounds formed from outputs of the first plurality of digital filters; and

wherein a channel signal² and corresponding leakage³ canceling signal based on the channel signal are supplied to the same speaker.

Instead, the Examiner relied on *Kunugi* to disclose, teach and/or suggest such claimed elements. Applicants note, however, *Kunugi* states:

"[i]n accordance with the above and other objects, the invention provides a sound field correcting system in

¹ According to Federal Standard 1037C (1996) noise is "an undesired disturbance within the frequency band of interest" Clearly, the leakage described in the specification is an undesired disturbance, and the leakage canceling signal is directed to canceling the leakage.

² "channel signal" was previously presented as "signal channel"

³ "leakage" was previously presented as "noise"

which, in order to eliminate the effects of reflected sound waves in the sound field, the original signal is added to a signal which is obtained by varying the characteristic of the original signal to form a loudspeaker driving signal, thereby to make the frequency characteristic of the composite sound signal received at the listening point essentially flat. More specifically, in a sound field correcting system of the invention, a signal obtained by adjusting the level and delay of the original signal is superposed on the original signal to obtain a signal for driving the loudspeaker, thereby to eliminate the effect of the reflected sound wave at the listening point in the sound field" (emphasis added). *Kunugi*, at col. 3, ll. 41-55.

In addition to the foregoing quote, the Applicants note that Equations 1-5 to 1-8 of *Kunugi* indicate that the loudspeaker driving signal is formed such that, when applied to the loudspeaker, the loudspeaker does not produce a reflected sound wave that can be perceived at the listening point. See *Kunugi*, at col. 6, l. 25 to col. 7, l. 46, and Figures 8A-8B. That is, the loudspeaker driving signal does not include the components of the original signal that would otherwise cause the loudspeaker to produce such reflected sound wave. See *Id.* Applicants submit, however, *Kunugi* fails to disclose, teach and/or suggest that the loudspeaker driving signal causes the loudspeaker to produce either the reflected sound wave or a sound wave to cancel the reflected sound wave, much less, both. As such, Applicants submit that *Kunugi* fails to disclose, teach or suggest the elements of the previously-pending claim 7 directed to the "canceling sound wave," including, for example the claimed elements:

in which predetermined transfer characteristics are set at the second plurality of digital filters so as to cause a canceling sound wave to be produced to control sound at a second point within the sound field

among sounds formed from outputs of the first plurality of digital filters; and

wherein a channel signal and corresponding leakage canceling signal based on the channel signal are supplied to the same speaker.

Applicants respectfully wish to remind the Examiner that the failure of an asserted combination to teach or suggest each and every feature of a claim remains fatal to an obviousness rejection under 35 U.S.C. § 103. See *Ex Parte Wada and Murphy*, BPAI Appeal No. 2007-3733, at p. 8. (January 14, 2008). Given the foregoing and the Examiner's admission that *Bienek* does not disclose such claimed elements, Applicants submit that the Examiner has not set forth a *prima facie* case of obviousness based on the combination of *Bienek* and *Kunugi*.

Notwithstanding the lack of a *prima facie* case of obviousness, Applicants amend the previously-pending claim 7 in an effort to dissuade the Examiner from maintaining the rejection of the previously-pending claims 7-9. To this end, Applicants amend the claim 7 to make clear that (i) the channel signal is adapted to form at least a portion of the audio signal that arrives as the first point, (ii) the leakage canceling signal is adapted to form at least a portion of the canceling sound wave, and (iii) both of the channel signal and leakage canceling signal are supplied to and **reproduced** by the same speaker.

Further, Applicants submit that any reasonable combination of the teachings of *Bienek* and *Kunugi* does not morph into Applicants' invention. Instead, Applicants submit that any reasonable combination results in system that provides two different types of directional audio sound waves to a given listening location, where each of the directional audio sound

waves is formed from a compensated signal to prevent undesired disturbances at the listening location.

To this end, *Bienek* teaches using a DPAA to provide surround sound, where the sound is directed to a listening location by signals that form three different beams, namely, B1, B2 and B3. See *Bienek*, at p. 24, ll. 1-19. *Bienek* also teaches these signals may be compensated using a "window function [that] reduces the effects of 'side lobes' at the expense of power" (emphasis added). *Bienek*, at p. 26, ll. 22-23 and Fig 11A-D. *Bienek* further teaches controlling the power of the signals to cause the "transducers near the outside of array (4102) [to] have a lower output level than those in the centre [so as] to reduce side lobes and improve directivity." *Bienek*, at p. 27, ll. 9-10 and Fig 11A-D. Thus, *Bienek* teaches producing directional sound waves that are compensated as a function of the power so as to reduce undesired side lobes.

On the other hand, the Equations 1-5 to 1-8 of *Kunugi* (as noted above) indicate that the loudspeaker driving signal does not include the components of the original signal that would otherwise cause the loudspeaker to produce an undesired reflected sound wave at a listening location. See *Kunugi*, at col. 6, l. 25 to col. 7, l. 46, and Figures 8A-8B. Thus, *Kunugi* teaches producing directional sound waves that are compensated so as not to include the components of the original signal that would otherwise cause the loudspeaker to produce undesired reflected sound waves.

As can be readily discerned from the foregoing, any reasonable combination of *Bienek* and *Kunugi* does not teach or suggest the claimed combination of elements of claim 7-9, including:

in which predetermined delay times are set at the first plurality of digital filters so that respective propagation times required until the audio signal arrives at a first point within the sound field through the first plurality of digital filters and the respective plurality of speakers coincide with each other, and

in which predetermined transfer characteristics are set at the second plurality of digital filters so as to cause a canceling sound wave to be produced to control sound at a second point within the sound field among sounds formed from outputs of the first plurality of digital filters,

wherein (i) a channel signal for forming at least a portion of the audio signal that arrives at the first point and (ii) a leakage canceling signal for forming at least a portion of the canceling sound wave are supplied to and reproduced by the same speaker.

In view of the foregoing, Applicants submit that *Bienek* and *Kunugi*, alone or combined, fail to disclose, teach and/or suggest the Applicants' invention. As such, Applicants submit that the combination of *Bienek* and *Kunugi* fails to render the Applicants' invention obvious.

As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he telephone Applicants' Attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Application No.: 10/532,546

Docket No.: SONYJP 3.3-1031

Dated: June 1, 2009

Respectfully submitted,

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